REMARKS:

This application has been reviewed in light of the Office Action dated July 17, 2003. Claims 1-5, 7-34, 36-38 and 40-47 are presented for examination. Claims 2, 14-17, 30 and 31 have been amended to define still more clearly what Applicants regard as their invention. Claims 2, 14-17, 30 and 31are in independent form. Favorable reconsideration is respectfully requested.

Claims 2-8, 11-17, 20-24, 27-41 and 44-47 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,034,478 (Kawade et al.) or Japanese Patent Application No. Hei 09-298029 in view of JP 62-174840 (Banno et al.) and Japanese Patent Laid Open No. 6-12997 (Ueno et al). Claims 9, 10, 25, 26, 42 and 43 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kawade et al. (or JP 09-298029), Ueno et al., and Banno et al., in view of European Patent Application 0 769,796 A1 (Taiko et al).

In accordance with an aspect of the invention to which the independent claims relate, the timing of introducing the gas for promoting cohesion and the heating temperature are controlled, and the electroconductive film is energized by successively applying a phase shifted voltage pulse to the plurality of row wirings, thereby providing an advantage that the performance characteristics of the plurality of the electron-emitting devices are made uniform.

Claims 2, 14-17 and 30-31 have been amended to recite that the electron-emitting devices are wired through matrix wirings comprising a plurality of row wirings and column wirings and to clarify that the energizing step is performed by successively

applying a phase shifted voltage pulse to the plurality of the row wirings.[1] For example, as amended, Claim 2 recites a method for producing electron-emitting devices wired through matrix wirings comprising a plurality of row wirings and column wirings. Each electron-emitting device includes a pair of electrodes and an electroconductive film having an electron-emitting region, and the electroconductive film is disposed between the pair of electrodes. The electron-emitting regions of the electron-emitting devices are formed by a process which includes the steps of preparing electroconductive films, and energizing the electroconductive films, while heating a substrate on which the electroconductive films are disposed at a temperature not higher than 150°C within an atmosphere comprising a gas for promoting cohesion of the electroconductive films. The energizing step is performed by successively applying a phase shifted voltage pulse to the plurality of the row wirings.

Support for the amendment to Claim 2 appears in the specification as originally filed, at least at page 42, lines 21-24.

As pointed out in the Request for Reconsideration filed on June 20, 2003, Kawade et al. (col. 11, line 32 to col. 12, line 33) and JP 09-298029 disclose energization forming an electroconductive film in an atmosphere comprising a gas that promotes the cohesion of the electroconductive film. Electron-emitting devices are provided as an electron source of an image-forming device (Figure 8 of Kawade et al).

1/ Despite the changes made to the claims herein, Applicants does not concede the propriety of either the Section 103(a) rejections or the Examiner's remarks set forth in the Office Action. Indeed, Applicants still strongly believe that the former version of those claims was patentable over the art relied on by the Examiner, for the reasons set forth in the previous Request for Reconsideration.

The Office Action concedes that Kawade et al. and JP 09-298029 do not disclose that the electroconductive film is preheated between 50°C and 150°C prior to energizing forming.

Banno et al. refers to an electroconductive film being heated by a heater 25 while the film is being energized (Fig. 2). A substrate is heated locally by Joule heat generated during energization forming, and is therefore likely to be cracked during the energization forming. In order to prevent the cracking, the substrate is heated while the energization forming is conducted. Banno et al. also refers to further conducting the energization forming within an atmosphere and an evacuated space.

Moreover, Ueno et al. refers to a surface-conduction type of electron emitting device in which a position and shape of an electron emission portion are controlled. The English translation of Ueno et al. also teaches that a fine particle film 56 is subjected to energization forming. At that time, an atmosphere is formed by mixing Ar gas with H_2 gas by 5%. According to Ueno et al., conventionally, during a forming process within an atmosphere or evacuated space, heat of 10J is generated. According to the method of Ueno et al., the heat generated is 4J, that is, 40% of that in the conventional process. Thus, according to Ueno et al., the forming process within the atmosphere of H_2 gas (i.e., cohesion promoting gas) generates Joule heat smaller than that generated by the forming process in an atmosphere or an evacuated space.

As was pointed out in the Remarks section of the Request for Reconsideration filed on June 20, 2003, Applicants respectfully submit that nothing in Kawade et al., JP 09-298029, Banno et al., or Ueno et al. would teach or suggest producing electron-emitting devices, each including a pair of electrodes and an electroconductive film

having an electron-emitting region, wherein the electroconductive film is disposed between the pair of electrodes, and the electron-emitting regions of the electron-emitting devices are formed by a process including the steps of preparing electroconductive films, and energizing the electroconductive films, while heating a substrate on which the electroconductive films are disposed at a temperature not higher than 150°C within an atmosphere comprising a gas for promoting cohesion of the electroconductive films, as recited in Claim 2.

Moreover, nothing in Kawade et al., JP 09-298029, Banno et al., or Ueno et al. would teach or suggest a method for producing electron-emitting devices wired through matrix wirings, comprising a plurality of row wirings and column wirings, wherein the above energizing step is performed by successfully applying a phase shifted voltage pulse to the plurality of the row wirings, as recited in amended Claim 2.

For these reasons, Claim 2 is believed to be clearly patentable over those references, whether considered separately or in combination.

Independent Claims 14-17, 30 and 31 are each directed to a method which has features that are similar in many relevant respects to those of Claim 2 discussed above, and also are believed to be patentable over the prior art are relied on by the Examiner for substantially the same reasons as is Claim 2.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons as are those independent claims. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

This Amendment After Final Rejection is believed clearly to place this application in condition for allowance and its entry is therefore believed proper under 37 C.F.R. § 1.116. In any event, however, entry of this Amendment After Final Rejection, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, the Examiner is respectfully requested to contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

Wherefore, it is respectfully requested that all outstanding rejections be withdrawn and the subject application be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

Attorney for Applicants
Registration No. 42,476

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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